

ABSTRACT

A reformer reactor 10 for producing a hydrogen-rich gas includes a first zone 18, a second zone 20, a third zone 22, a fourth zone 24 and a product gas collection space 40. The zones are sequentially adjacent. A flow path P1 is provided for directing flow of a reaction stream in diverging directions from the first zone 18 into the second zone 20, the flow of the reaction stream continuing in the same general diverging directions through the second zone 20 and into and through the third and fourth zones 22,24. Directing the flow in diverging directions permits flow into and through a zone over more than just a single cross-sectional geometry of the zone or a single cross-section of the flow path transverse to the direction of flows. This configuration can be used to require a lower pressure for flowing the reaction stream so as to reduce the parasitic requirements of the reactor. This configuration can also be used to increase throughput of the reactor.